DOCUMENT RESUME

ED 274 926 CG 019 430

AUTHOR Thorburn, Phyllis; Meiners, Mark R.
TITLE Nursing Home Patient Outcomes: The Results of an Incentive Reimbursement Experiment. Long-Term Care Studies Program Research Report.
INSTITUTION National Center for Health Services Research and Health Care Technology Assessment (DHHS/PHS), Rockville, MD.
REPORT NO DHHS-PHS-86-3400
PUB DATE Aug 86
NOTE 12p.; For related document, see ED 273 911.
PUB TYPE Reports - Descriptive (141)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Incentives; *Medical Services; *Nursing Homes; *Older Adults; *Patients
IDENTIFIERS *Long Term Care; *Medicaid

ABSTRACT

A major demonstration and evaluation project was undertaken to study the consequences of using incentive payments to change admission, discharge, and outcome patterns for Medicaid patients in nursing homes. Thirty-six proprietary, Medicaid-certified, skilled nursing homes in San Diego County with a combined Medicaid inpatient census of approximately 3,600 residents participated. Baseline data were collected from November 1980 through April 1981. Homes were then assigned to either a control group or a treatment group. During the next two years, an incentive reimbursement system was employed in paying for care in nursing homes in the treatment group. The results of the outcome-incentive component of the study revealed no statistically significant differences in patient outcomes, as measured by goal achievement, between treatment and control facilities. There was no evidence that goal-related reimbursement incentives improved patient outcomes. The results do suggest that goals related to clearly defined conditions are the ones most likely to improve patient outcomes. Incentive reimbursement may still prove effective if it is limited to certain clearly delineated conditions. If this is true, incentive reimbursement could be used to supplement rather than replace other approaches to quality assurance in nursing homes. (NB)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED274926

NCHSR Health Care for the Aging

Nursing Home Patient Outcomes: The Results of an Incentive Reimbursement Experiment

CG 019430

Long-Term Care Studies Program
Research Report

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
☑ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
National Center for Health Services Research
and Health Care Technology Assessment

BEST COPY AVAILABLE

August 1986

Background

Phyllis Thorburn, Ph.D., a political scientist formerly with NCHSR, is now with the Veterans Administration, Department of Medicine and Surgery. **Mark R. Meiners**, Ph.D., a health economist, is Senior Research Manager of the Long-Term Care Studies Program of the NCHSR Division of Intramural Research.

Additional information on the intramural research program is available from the National Center for Health Services Research and Health Care Technology Assessment, 3-50 Park Building, Rockville, MD 20857; 301/443-2560. Inquiries may be directed to the Health Services for the Aged Studies Program or to the Long-Term Care Studies Program.

Copies of NCHSR publications are available from NCHSR Publications and Information Branch, 1-46 Park Building, Rockville, MD 20857; 301/443-4100.

The following is the recommended bibliographic citation for this publication:

Thorburn, Phyllis, Mark R. Meiners. *Nursing Home Patient Outcomes: The Results of an Incentive Reimbursement Experiment*, Long-Term Care Studies Program Research Report, DHHS Publication No. (PHS) 86-3400. U.S. Department of Health and Human Services, National Center for Health Services Research and Health Care Technology Assessment, March 1986.

The 824-page documentation report of Applied Management Sciences, Inc. (see reference 10), may be ordered from the National Technical Information Service, Springfield, VA 22161 (703/487-4650), as PB86-225554. The study data on magnetic tape are available from NTIS in three parts, each of which includes the documentation report. These are: resident materials, PB86-225547; facility materials, PB86-225562; and study materials, PB86-225570. Check prices before ordering.

DHHS Publication No. (PHS) 86-3400

Health Care for the Aging Research Reports present findings from studies conducted by the Long-Term Care Studies Program and the Health Services for the Aged Studies Program, components of the Division of Intramural Research, National Center for Health Services Research and Health Care Technology Assessment (NCHSR). This series presents information useful to those making administrative or policy decisions on matters related to long-term care or the general problem of health care for the elderly.

Overview

With improvements in medical technology and an increase in life expectancy, there also has been a substantial increase in the number of individuals with chronic diseases. Policy research now being conducted by the NCHSR intramural research program is concerned with defining the dimensions of the problems of caring for the chronically ill and identifying various approaches to organizing, financing, and delivering acute and long-term care services. The chronically ill elderly, who absorb an ever-growing proportion of our public and private resources, are of particular concern.

The intramural research program is concerned specifically with such problems as:

- the size and sources of our expenditures for long-term care
- the feasibility of alternative financing and reimbursement strategies
- the factors that affect the demand for and use of long-term care services
- the types of care that might be required for particular levels of functional disability
- the cost and economic implications of informal support systems
- the organization and coordination of social and medical services
- the economic and social implications of alternative health care and living arrangements.

This research report presents findings from a major demonstration and evaluation project which studied the consequences of using incentive payments to change admission, discharge and outcome patterns for Medicaid patients in nursing homes. In this experiment incentive payments were provided:

- to encourage nursing homes to admit highly dependent Medicaid residents who might otherwise be hospitalized inappropriately
- to improve the nature of the care provided by the nursing home by setting target outcome goals for specific patients and by establishing formal treatment plans for achieving these goals
- to encourage more appropriate discharges by encouraging institutions to provide case-management services, and by paying additional sums in situations in which discharge resulted from improved care.

An incentive-payment system was developed to reward facilities for achieving the various admission, treatment and discharge objectives. The experiment was carried out in 36 proprietary, Medicaid-certified, skilled nursing homes in San Diego County. These nursing homes had a combined Medicaid inpatient census of about 3,600 residents. The experiment lasted 30 months. The first six months (November 1980 through April 1981) provided baseline data on the nursing homes, their residents, and their methods of operation. Homes were subsequently assigned to either a control group or a treatment group. During the next two years (May 1981 through April 1983) an incentive reimbursement system was employed in paying for care in nursing homes included in the treatment group.

Data collecting, training and supervising a local field team of qualified geriatric nurses, and disbursing incentive payments to the nursing homes were the responsibilities of Applied Management Sciences, Inc. (funded by contract OASH 233-79-3019). All participating nursing homes were required to sign subcontracts with the contractor guaranteeing provision of data and accepting the incentive reimbursement system as well as judgments made by the local field team on authorization for payment to the treatment homes.

Admission, discharge, assessment, goal setting and care planning of residents remained the responsibility of the

nursing homes. The contractor's local field team authorized:

1. Incentive payments on behalf of Medicaid residents according to the study's resident-classification system,
2. Outcome-incentive payments for eligible residents who successfully achieved previously approved care goals, and
3. Discharge-incentive payments on behalf of residents who were discharged and maintained at lower levels of care for at least 90 days.

The incentive-payment system was designed to achieve each of the study's objectives; that is, an admission incentive was paid to encourage homes to admit sicker Medicaid residents who required above average care; an outcome incentive was paid to encourage homes to expand their nursing care services; and a discharge incentive was paid to encourage appropriate discharges and to provide case-management services.

The reimbursement system adhered to a number of basic principles:

1. All incentive payments were paid in addition to the Medicaid reimbursement.
2. Current Medicaid residents as well as new Medicaid admissions (or residents converting to Medicaid) were eligible for incentive payments.
3. Admission-incentive payments were paid on a monthly basis, outcome-incentive payments were paid on a quarterly basis, and discharge-incentive payments were prorated on a monthly basis following discharge.
4. Admission-incentive payments were paid on a prorated basis for residents who died or were transferred to a hospital because of an unavoidable change in health status.
5. The amount of the admission-incentive payment was not decreased as the resident improved; an increase was effective for the quarter following an unavoidable decline in health status.
6. Admission-incentive payments continued for three years beyond the end of the demonstration period for residents admitted during the first year of the treatment period.

The admission-incentive payments were computed based on the mean time per patient day required for each nursing care activity. This mean time was linked with a composite wage, which was weighted by the skill mix of nursing home staff delivering the care of service, to arrive at the mean nursing costs. The payments were designed to compensate for the costs of heavy-care patients which exceeded the amount paid by Medicaid.

The computation of the outcome-incentive payment was based on:

1. The basic services required in order to achieve the goal
2. The mean time required to perform the services
3. The skill mix of nursing personnel involved in service delivery and their composite hourly wage, and
4. The average number of days needed to achieve the goal.

The discharge-incentive payment rates include two components, vacant beds and staff effort. Since the vacant bed costs varied by a facility's bed capacity, two discharge-incentive rates were set based on the Medicaid SNF-bed rates that went into effect at the time of the study. The incentive payment covered up to 10 days of vacant bed cost for a timely discharge. The staff effort component of the incentive payment was intended to cover the cost of discharge planning, coordinating, and follow-up.

This report presents the results of the outcome-incentive component of the study. Other reports in this series will provide data and analysis on other aspects of the research project.

Nursing Home Patient Outcomes: The Results of an Incentive Reimbursement Experiment

Phyllis Thorburn and Mark R. Meiners

The quality of nursing home care has been a long-standing concern of Federal and state officials as well as patients and their families. The effectiveness of current regulatory approaches to ensuring quality often has been questioned. The belief has developed that the amount and structure of reimbursement or payment for care can influence quality of care as much as formal quality assurance mechanisms, which concentrate on facility characteristics and capabilities rather than on direct patient care. Structuring a reimbursement system to encourage quality care by rewarding positive patient outcomes seems an appealing alternative.

Designing a reimbursement system that provides an incentive for giving quality care, however, presents difficulties *(1)*. There is no consensus as to what quality care is or should be, much less how to measure it. Concerned by the inadequacies of the "structure" and "process" approach to measuring quality that predominates in the current practice of regulation, certification, and reimbursement, some analysts have suggested linking payment to patient outcomes *(2, 3)*.

The design of reimbursment systems to reward nursing homes for positive patient outcomes is only beginning to be examined *(4, 5)*. Most states have avoided such initiatives because of a concern that they were certain to increase costs, while the benefits were less certain. However, little is known as to how effectively outcome-based incentive reimbursement might work or what effect it might have.

To obtain such information, the National Center for Health Services Research and Health Care Technology Assessment (NCHSR), with the cooperation of the Health Care Financing Administration (HCFA), undertook a demonstration research project to test the efficacy of a reimbursement system for Medicaid nursing homes that included a series of outcome-goal incentives. The objective of the outcome-goal component of the study was to improve patient outcomes through patient-specific goal setting, care planning, and plan implementation.

The outcome goals were designed to complement two additional study objectives which also involved special incentive payments. These objectives were to encourage nursing homes to admit highly dependent Medicaid patients who might otherwise remain inappropriately hospitalized, and to encourage appropriate discharges through case-management services provided by the nursing homes, thereby freeing beds for more severely dependent patients. This report describes the outcome-goal component of that system and its results. Further information on the design, implementation, and results of other aspects of the experiment is contained in other reports *(6-10)*.

Background

The NCHSR demonstration was conducted in 36 proprietary, Medicaid-certified skilled nursing homes in the San Diego Standard Metropolitan Statistical Area (SMSA). (The Medicaid program in California is called MediCal. In this report we use the more general term Medicaid.) The demonstration was in effect for a period of 30 months (November 1980 through April 1983). The first six months (November 1980 through April 1981) of this 30-month period were required to collect baseline data on the participating nursing homes, their residents, and their operations. At the end of the baseline period, the homes were randomly assigned to a control group or an experimental group. During the next two years (May 1981 through April 1983), the 18 experimental facilities operated under the terms of the incentive reimbursement system.

Medicaid patients admitted to the experimental facilities during the one-year treatment period were eligible for outcome goals if they were expected to stay at least 90 days. Shorter stay patients were excluded from all incentive payments on the grounds that they typically have no difficulty gaining access to nursing homes, and either do not require special nursing care or already qualify for payment for short-term rehabilitation after an acute-care episode. Outcome goals could be nominated at admission or during the subsequent 12 months. However, to be included as subjects for the outcome-goal aspect of the study, patients or the persons legally responsible for them had to agree to participate in the experiment. This eliminated 34 percent of the Medicaid patients admitted to experimental facilities and 37 percent of the Medicaid patients admitted to control facilities during the course of the study.

Six outcome goals were selected as the focus of the study. The selection of goals was based on the specific patient characteristics used in the admission-incentive part of the study to distinguish the level of care needed by patients. The admission-classification system emphasized patient performance with regard to specific activities of daily living (eating, bathing, dressing, toileting, transferring, and con-

tinence), and the need for special nursing care of selected conditions (stage 3 or 4 decubitus ulcer *(11)*, comatose or quadriplegic care, and tube feeding).

Activities of daily living (ADL) are frequently used measures of a patient's dependency and need for care. The special nursing conditions were those believed by local representatives of the nursing home industry, Medicaid officials in California, and the researchers, to add substantially to the time (and therefore, the cost) required to care for patients. Because the admission-incentive payment system emphasized special nursing services and ADLs, these patient characteristics were emphasized in the outcome-goal, incentive-payment system.

Table 1 lists the full set of outcome goals, with the criteria used for eligibility and achievement. The improvement goals included those related to the improvement of stage 3 or 4 decubitus ulcers, the elimination of the need to tube feed, the rehabilitation and discharge of light-care ADL patients, and the improvement of heavy-care ADL patients. The first two goals, decubitus ulcer care and tube feeding, apply to relatively narrowly defined conditions and have limited applicability, whereas the two ADL goals have broader application. The two maintenance goals, intended to prevent deterioration, were related to the maintenance of ADL status (when temporary supportive services were provided to patients who suffered temporary declines in health status), and care for comatose/quadriplegic patients. These goals applied to relatively small numbers of patients.

The payment or "incentive" for the successful achievement of outcome goals ranged from $126.63 per patient for tube feeding to $306.39 for maintenance of ADL status. In setting the monetary value of the goals, the services required to achieve each goal were determined, the amount of time and the level of skill required to provide the services were estimated, wage data were used to estimate the daily cost of providing the services, and the daily cost was multiplied by the average number of days estimated to achieve success. The payment rates were adjusted so that a successful outcome earned a facility twice the estimated cost of achieving the goal. This was done to compensate for a possible error rate of 50 percent in estimating patient outcomes *(6)*.

Experimental facilities nominated goals which they considered appropriate and achievable for patients. Then a research team nurse reviewed each goal to confirm that the patient met the eligibility criteria for the goal and that there was a reasonable chance of achievement. If so, the goal was approved. Ninety days later, the research team nurses reassessed the patient's condition to determine whether the goal had been achieved.

Control facilities were not asked to nominate patients for goals since they were not receiving any payment. Therefore, research team nurses nominated patients in control facilities whom they considered appropriate and who met the eligibility criteria. After 90 days, research team nurses reassessed the patients' conditions using the same instruments and criteria as in the experimental facilities, and determined whether the goals had been achieved.

No goals were set for "on-board" patients (those already in the facility at the beginning of the experiment) in the control facilities even though treatment facilities were allowed to nominate goals for these residents. On-board residents are therefore excluded from this analysis, which is restricted to Medicaid patients admitted during the treatment period, and Medicaid patients admitted during the baseline period who were still in residence during the treatment period.

Analytic approach

Eligibility criteria were assigned each outcome goal (see Table 1). However, in the case of the goal "maintenance of ADL status," the basic eligibility criteria could not be examined because information about temporary declines in health status was not routinely collected. This goal was nominated for only two patients, one in an experimental facility and one in a control facility, and in neither case was the goal achieved. For the remaining outcome goals the following criteria were used for the purpose of analysis to determine patient eligibility:

- decubitus care: at least one stage 3 or 4 decubitus ulcer at admission
- tube feeding: classified at any assessment as requiring tube feeding
- light-care ADL: dependent in 2 to 4 ADLs at any assessment
- heavy-care ADL: dependent in 5 or 6 ADLs on initial assessment
- comatose/quadriplegic care: classified as comatose or quadriplegic at any assessment.

Table 1. Classification of outcome goals (NCHSR Nursing Home Incentive Reimbursement Study).

Improvement goals

Decubitus/skin ulcer care

Definition: Substantial remission or elimination of Stage III/IV decubiti skin ulcers.

Eligibility: Resident has one or more III/IV decubiti/ulcers on initial assessment; *or* resident developed State III/IV decubiti/ulcers after the initial assessment, but the decubiti were unavoidable. The decubiti are deemed unavoidable if the resident is in a state of poor nutrition despite efforts to provide a nutritious diet and all appropriate measures were taken.

Successful achievement: All Stage III/IV decubiti are healed to at least the Stage I/II condition within 90 days.

Payment: $285.30

Tube feeding

Definition: Elimination of need for naso-gastric or gastric tube or IV feeding or when gastronomy becomes self-care.

Eligibility: Resident is classified as requiring tube feeding on initial assessment (tube feeding refers to the use of naso-gastric or gastric tubes; intravenous feeding is included when the IV is used to provide sustenance, rather than medication or hydration); *or* physician orders tube or IV feeding due to change in health status.

Successful achievement: Tube (not self-care) or IV feeding has been discontinued for at least two weeks prior to the assessment of goal achievement (90 days after goal setting); *or* patient with a gastronomy tube has been self-care for two weeks prior to the assessment.

Payment: $126.63

Light care ADL

Definition: Substantial reduction in the need for human assistance in ADL functioning as a result of appropriate rehabilitative nursing/maintenance services, such as ADL training in bathing, dressing, or transfer; ambulation training; and bladder or bowel training.

Eligibility: Resident is dependent in 2 to 4 ADL on any assessment; *and* resident appears to have rehabilitation and discharge potential. (A discharge goal must be established in conjunction with this goal.)

Successful achievement: Resident becomes 0-2 ADL-dependent within 90 days and appropriate rehabilitation nursing/maintenance services were provided; *and* resident is discharged within the same or next 90-day period.

Payment: $190.80

Heavy care ADL

Definition: Change in resident's status from 5 or 6 ADL-dependent to 3 or 4 ADL-dependent.

Eligibility: Resident has 5 or 6 ADL dependencies on initial assessment; *and* resident appears to have rehabilitation potential; *and* resident will remain at 5 or 6 ADL-dependent level unless rehabilitative nursing services are provided.

Successful achievement: Resident becomes independent in feeding; *and* resident is continent; *and* resident remains at 3 to 4 ADL-dependency level for 2 weeks prior to the 90-day assessment for goal achievement.

Payment: $239.36

Maintenance goals

Maintenance of ADL status

Definition: Maintenance of a 0-4 ADL resident who experiences a reversible change in health status that would result in the need for human assistance in continence or feeding without the temporary provision of supportive or maintenance services.

Eligibility: Resident has 0-4 dependencies; *and* suffers a reversible change in health status that temporarily results in a 5-6 ADL level.

Successful achievement: Resident had 0-4 ADL dependencies and still has 0-4 dependencies at the next assessment despite temporary health status change; *and* there is documentation of temporary decline for two weeks or more to the 5-6 ADL level; *and* there is documentation of services to deal with the temporary decline; *and* supportive or maintenance services are no longer being provided or are expected to be discontinued within the next 10-14 days.

Payment: $306.39

Care for comatose/quadriplegic resident

Definition: Maintenance of good skin condition and joint function in the major joints.

Eligibility: Patient is comatose or quadriplegic at initial or subsequent assessment.

Successful achievement: Patient comatose or quadriplegic after 90 days; *and* no State II, III, or IV decubiti ulcers are present (unless they were present and documented at the time of prior assessment); *and* no additional restrictions of joint function in major joints have developed since initial assessment; *and* if a State I decubitus ulcer is present after 90 days, evidence that preventive measures were carried out and active treatment given must be documented on the resident's chart.

Payment: $345.60

Source: National Center for Health Services Research and Health Care Technology Assessment. Long-Term Care Study Program.

These eligibility criteria represent only the basic criteria that determined whether a facility was allowed to nominate a patient for a goal. The judgment of nurses in deciding whether a goal was in fact appropriate for a patient (that is, whether there was a reasonable chance of achieving the goal) could not be proxied.

A total of 823 patients in the experimental facilities and 872 patients in the control facilities were eligible for at least one outcome goal. However, only about a third of these patients (32.6 percent in experimental facilities and 35.6 percent in control facilities) were nominated for an outcome goal. The analysis that follows focuses on the goal-specific results because each goal had its own eligibility criteria and a patient could be eligible for more than one type of goal. While a few patients were nominated for several goals, only one experimental and one control patient achieved more than one type of goal. In both cases the heavy-care and light-care goals were achieved.

The outcome-goal analysis is limited to univariate comparisons between experimental and control facilities. Multivariate analyses were performed to control for the effect of other patient characteristics that distinguished goal-eligible patients in the experimental facilities from goal-eligible patients in the control facilities. These added no information concerning the effect of the incentive payments to that obtained from the simpler presentation of results.

Results

The experiment shows no statistically significant differences in patient outcomes, as measured by goal achievement, between treatment and control facilities. In treatment facilities, 31.7 percent of all patients who were nominated and assessed achieved a goal; in control facilities, 32.1 percent achieved a goal. The difference is not significant, nor are differences between treatment and control facilities significant for any of the individual goals.

The ADL-specific goals were those for which the greatest number of patients were eligible and nominated. Most frequently nominated was the "heavy-care ADL" goal, which was designed to improve the rehabilitation of patients with dependency in 5 or 6 ADLs by reducing their dependency to 4 ADLs or fewer. This is not surprising because about three-quarters of all Medicaid admissions that were expected to have a long stay were dependent in at least 5 ADLs. At the other extreme, in terms of eligibility and nomination, are the goals designed for patients needing special nursing services. Relatively few study admissions (about 11 percent) were eligible for any of these goals and even fewer were nominated. The results for each outcome goal are displayed in Tables 2 through 6.

Although the experimental and control facilities had similar numbers of patients eligible for the heavy-care ADL goal (600 and 588, respectively), the nomination rate was about 5 percent lower in the experimental facilities (Table 2). Despite the more conservative nomination rate in the experimental facilities, about 14 percent of the patient nominations by these facilities were not approved by the research team nurses because either the patient did not meet the eligibility criteria or there was no reasonable expectation that the goal could be achieved. Roughly the same rate of disagreement was found with all the goals, with the exception of the comatose/quadriplegic goal. Data were not collected on disagreements when the research team nurses believed the patient should have been nominated and the facility did not. However, the higher rate of nomination in the control facilities suggests that this type of disagreement may have existed.

Table 2. Heavy-care ADL outcome goal results, by type of facility (NCHSR Nursing Home Incentive Reimbursement Study).

	Experimental facilities		Control facilities
Eligible	600		588
Nominated	174		204
Approved	150		—
Assessed	135		179
Achieved	41		55
Percent nominated	29.0	*	34.7
Percent achieved	30.4		30.7

Note: Restricted to residents admitted during the treatment period, and those admitted during the baseline period who were still in residence during the treatment period. Eligible residents were those who gave informed consent, were classified as not dischargeable within 90 days on any assessment, and were dependent in 5 or 6 ADLs at initial assessment.

*Difference is significant at greater than the .05 level using a Chi-square test.

Source: National Center for Health Services Research and Health Care Technology Assessment. Long-Term Care Studies Program.

Table 3. Light-care ADL outcome goal results, by type of facility (NCHSR Nursing Home Incentive Reimbursement Study).

	Experimental facilities		Control facilities
Eligible	286		339
Nominated	48		81
Approved	39		—
Assessed	33		73
Achieved	7		18
Percent nominated	16.8	*	23.9
Percent achieved	21.2		24.7

Note: Restricted to residents admitted during the treatment period, and those admitted during the baseline period who were still in residence during the treatment period. Eligible residents were those who gave informed consent, were classified as not dischargeable within 90 days on any assessment, and were dependent in 2 or 4 ADLs at any assessment.
*Difference is significant at greater than the .05 level using a Chi-square test.
Source: National Center for Health Services Research and Health Care Technology Assessment. Long-Term Care Studies Program.

It is clear that the incentive payments did not encourage nomination of the heavy-care ADL goal. The experimental facilities nominated 6 percent fewer of their eligible patients than did the control facilities. There was no evidence that the incentives enhanced the likelihood of goal achievement. The achievement rates for the heavy-care ADL goal were nearly identical in the experimental and control facilities (30.4 percent and 30.7 percent, respectively).

Although most patients who were nominated but not assessed for the heavy-care ADL goal were discharged back to a hospital or died, a few were discharged to a lower level of care, suggesting a positive outcome. However, most patients (7 of 9) discharged to a lower level of care were in control facilities. If the achievement rate is recalculated counting such discharges as goal achievement, experimental facilities still had a slightly lower achievement rate than control facilities.

The second most common goal was "light-care ADL," designed to encourage rehabilitation and discharge of patients with 2 to 4 ADL dependencies (Table 3). For this goal the experimental facilities had fewer eligible patients (286 compared to 339) and a 7 percent lower nomination rate. The achievement rate was lower in the experimental facilities, although the difference is not statistically significant. Most of those who could not be reassessed had gone back to the hospital. Three patients (2 in control facilities and 1 in treatment facilities) were discharged to a lower level of care without a goal-achievement reassessment.

Few patients were eligible for the goals associated with tube feeding, decubitus care, and comatose/quadriplegic care (Tables 4-6). However, substantially more patients were eligible for each goal in the experimental facilities than in the control facilities. This is probably because admission-incentive payments successfully encouraged more admissions to the experimental nursing homes of patients requiring care for these special conditions (7). Nonetheless, the sample sizes are too small to confirm differences in nomination and achievement rates for these goals even when the differences appear substantial.

High proportions of those patients eligible were nominated for goals associated with decubitus care and comatose/quadriplegic care. Three-quarters of those eligible in the experimental group and half of those eligible in the control group were nominated for the comatose/quadriplegic goal. About 60 percent of those eligible in each facility group were nominated for the decubitus goal.

In terms of goal achievement, the experimental nursing homes did best with the tube feeding and comatose/quadriplegic goals. Their success rate with weaning patients from tube feeding was more than twice that for the control nursing homes, and they successfully maintained skin condition and joint motion of 7 of the 8 patients who were assessed. In contrast, the 3 patients nominated in the control facilities died or were discharged to a hospital and could not be assessed.

Table 4. Tube feeding outcome goal results, by type of facility (NCHSR Nursing Home Incentive Reimbursement Study).

	Experimental facilities	Control facilities
Eligible	59	30
Nominated	16	7
Approved	14	—
Assessed	13	5
Achieved	6	1
Percent nominated	27.1	23.3
Percent achieved	46.2	20.0

Note: Restricted to residents admitted during the treatment period, and those admitted during the baseline period who were still in residence during the treatment period. Eligible residents were those who gave informed consent, were classified as not dischargeable within 90 days on any assessment, and were classified at any assessment as requiring tube feeding.

Table 5. Decubitus ulcer outcome goal results, by type of facility (NCHSR Nursing Home Incentive Reimbursement Study).

	Experimental facilities	Control facilities
Eligible	41	29
Nominated	25	18
Approved	21	—
Assessed	16	10
Achieved	5	6
Percent nominated	61.0	62.1
Percent achieved	31.3	60.0

Note: Restricted to residents admitted during the treatment period, and those admitted during the baseline period who were still in residence during the treatment period. Eligible residents were those who gave informed consent, were classified as not dischargeable within 90 days on any assessment, and had any stage III or IV decubitus ulcers at admission.
Source: National Center for Health Services Research and Health Care Technology Assessment, Long-Term Care Studies Program.

Table 6. Comatose/quadriplegic outcome goal results, by type of facility (NCHSR Nursing Home Incentive Reimbursement Study).

	Experimental facilities	Control facilities
Eligible	12	6
Nominated	9	3
Approved	9	—
Assessed	8	0
Achieved	7	0
Percent nominated	75.0	50.0
Percent achieved	87.5	0.0

Note: Restricted to residents admitted during the treatment period, and those admitted during the baseline period who were still in residence during the treatment period. Eligible residents were those who gave informed consent, were classified as not dischargeable within 90 days on any assessment, and were classified as comatose/quadraplegic at any assessment.
Source: National Center for Health Services Research and Health Care Technology Assessment, Long-Term Care Studies Program.

The control facilities appear to have done better with decubitus care. Their achievement rate for the decubitus goal was nearly twice that of the experimental facilities, 60 percent to 31 percent. This is a substantial difference, although not statistically significant. However, it appears to reflect the way the goal was structured as much as differences in patient outcomes. The goal was formulated as the elimination or substantial remission (healed to at least stage 1 or 2) of all stage 3 or 4 decubitus ulcers. The decubitus goal would seem to have been easier to achieve for patients with stage 3 ulcers than for those with stage 4. In control facilities, all patients who achieved the goal had stage 3 decubiti; none of those with stage 4 achieved it. In the experimental facilities, 1 in 5 (20 percent) of the stage 3 patients achieved the goal, whereas 4 in 13 (30 percent) of the stage 4 patients did so. The numbers are too small to permit definitive conclusions, but the analysis suggests that a more highly discriminating set of goals, with some credit given for each level of improvement in decubiti, might have been preferable to the dichotomous goal used in this experiment.

Summary

On the basis of this experiment, there is no evidence that goal-related reimbursement incentives improve patient outcomes. The large number of patients eligible for the ADL goals, designed to encourage rehabilitation of both heavy-care and light-care patients, provided ample opportunities for the experimental facilities to earn incentive payments. There were no penalties for nominating a patient for any goal. However, the nomination rate in the experimental nursing homes for these goals was lower than in the control facilities, and this conservative approach did not reflect a better selection of opportunities for goal achievement. The goal-achievement rate was low in absolute terms and was no greater than the achievement rate in the control facilities, which did not receive any reimbursement apart from the standard Medicaid rate.

There is some suggestion of a treatment effect with the goals related to special nursing care, but none of the differences was statistically significant. The experimental facilities did best with the comatose and tube feeding goals. Their greater willingness and ability to deal with the more difficult stage 4 decubitus ulcer patients is noteworthy. However, these goals were only possible for a relatively small group of patients, while nearly all the Medicaid patients were eligible for one of the ADL goals and the experimental nursing homes were not encouraged by the incentive payments to accept that challenge.

Discussion

The model was that of a pure economic incentive. Facilites were assumed to be economically motivated firms that would respond to financial incentives. Proprietary nursing homes are in business to make profits, and by nominating patients for goals, and giving them the necessary rehabilitative services, they could make money in the experiment. Although limited training was provided at the beginning of the experiment, the nursing homes were mostly left to work out for themselves how to rehabilitate the patients to achieve the goals, and to master the process of care planning for these particular outcome goals. Provision of formal training or specific guidance in achieving patient goals was not part of the intervention.

However, change in a complex social organization is never simple and the experimental nature of this study introduces further complications. The point of the experiment was to encourage facilities to do things they were not previously doing. In order to give patients rehabilitative care to enable them to improve and be discharged, the nursing staffs needed to learn how to achieve the goals. This had to involve, at a minimum, commitment on the part of the facilities' leadership, and training of the staff in new or underutilized methods and approaches. It also might have involved providing staff members with incentives to successfully implement new procedures, although none of the facilities in fact did so. These changes are significant and more difficult to encourage in an experimental setting than if the change in reimbursement incentives were permanent and widespread.

An experiment that allows goals to be set for patients up to one year after their admission is viewed as a long-term commitment by the research organization. To the nursing homes, however, it may seem a very brief period and there may be reluctance to make staffing, policy, and organizational changes which could affect their operation long after the experiment is concluded. Also, had the experiment run longer, the sample sizes would have increased, which would have allowed a more definitive statement concerning the encouraging results with the tube feeding and comatose/quadriplegic goals.

The underlying premise of the experiment was that reimbursement or financial incentives were sufficient tools to facilitate improved patient care. Given the possibility of additional money, the facilities were expected to respond. In fact, the facilities appear to have responded with limited enthusiasm, particularly to those ADL goals for which the largest number of nursing home patients could qualify *(9)*. Although it may have been unrealistic to expect facilities to modify their behavior in a major way in order to respond to incentives that were only temporary, a stronger intervention, in which the economic incentive was supplemented by training in methods to achieve the goals, might have been more successful.

Probably a range of tools is needed to bring about a reorientation of nursing homes to more rehabilitative care. Financial incentives may prove to be one of those tools. But education and training of staff, including nurses aides, in techniques for rehabilitating patients, care planning, and related aspects of patient care may have a role. There also may be a need to train nursing home administrators or directors of nursing in methods of providing incentives to the lower-level staff members who provide the bulk of direct patient care.

The experiment raises important questions about the way goals should be structured. Goals were nominated for a minority of the patients and so could not be a mechanism for providing quality care for the total patient population. In part this was because of the patient-consent requirements of the research, but it also may reflect a judgment that no goal was appropriate in some cases. If incentive reimbursements were to be a total alternative to regulatory approaches, it would be important to formulate meaningful goals for virtually all patients.

However, although the numbers are too small to be definitive, these results suggest that goals related to clearly defined conditions are the ones most likely to improve patient outcomes. Incentive reimbursement may still prove effective if it is limited to certain clearly delineated conditions. In this event it could supplement rather than replace other approaches to quality assurance in nursing homes.

References

1. Willemain, T.R. *Designing Quality Incentive Systems for Nursing Homes*, final report, grant HS 04672. U.S. Department of Health and Human Services, National Center for Health Services Research, March 1983. PB85-113637.

2. Kane, R. Paying nursing homes for better care. *Journal of Community Health*, 2:1-4, 1976.

3. Kane, R., R. Kane. Care of the aged: Old problems in need of new solutions. *Science*, 200:913-919, 1978.

4. Willemain, T.R. Second thoughts about outcome incentives for nursing homes. *Research in Public Policy Analysis and Management*, 2:3-10, 1981.

5. Kane, R.L., R.M. Bell, S.D. Hosek, S.Z. Reigler, R.A. Kane. *Outcome-Based Reimbursement for Nursing Home Care*, final report, grant HS 03275. U.S. Department of Health and Human Services, National Center for Health Services Research, December 1983. PB84-200583.

6. Weissert, W.G., W.J. Scanlon, T.H. Wan, D.E. Skinner. Care for the chronically ill: Nursing home incentive payment experiment. *Health Care Financing Review*, 5,2, Winter 1983.

7. Meiners, M.R., P. Thorburn, P. Roddy, B.J. Jones. *Nursing Home Admissions: The Results of an Incentive Reimbursement Experiment*, Long-Term Care Studies Program Research Report, DHHS Publication No. (PHS) 86-3397. U.S. Department of Health and Human Services, National Center for Health Services Research and Health Care Technology Assessment, October 1985.

8. Jones, B.J., M.R. Meiners. *Nursing Home Discharges: The Results of an Incentive Reimbursement Experiment*, Long-Term Care Studies Program Research Report, DHHS Publication No. (PHS) 86-3399. U.S. Department of Health and Human Services, National Center for Health Services Research and Health Care Technology Assessment, March 1986.

9. Meiners, M.R., G.D. Heinemann, B.J. Jones. An Evaluation of Nursing Home Payments Designed to Encourage Appropriate Care for the Chronically Ill: Some Preliminary Findings. American Economic Association, annual meeting presentation, December 1982.

10. Applied Management Sciences, Inc. *A Controlled Experiment to Evaluate the Impacts of Incentive Payments on Nursing Home Admissions, Discharges, Case Mix, Care, Outcomes, and Costs: Documentation Report*, contract 233-79-3019. U.S. Department of Health and Human Services, National Center for Health Services Research and Health Care Technology Assessment, February 1986. (National Technical Information Service report PB86-225554, available as a separate report, as well as with data tapes and related materials; see note on page 2.)

11. The stages of decubitus ulcer formation correspond to tissue layers. In *Merck Manual of Diagnosis and Therapy*, 14th edition, p. 2066. Merck and Co., Inc., Rahway, N.J., 1982. Defines six stages, with the last two unlikely to be treatable in nursing homes. The first stage consists of skin redness that disappears on pressure; the skin and underlying tissues are still soft. The second stage shows redness, edema, and induration, at times with epidermal blistering or desquamation. In the third stage, the skin becomes necrotic, with exposure of fat. In the fourth stage, necrosis extends through the skin and fat to muscle; further fat and muscle necrosis characterize the fifth stage. In the sixth stage, bone destruction begins, with periostitis and ostetis, progressing finally to osteomyelitis, with the possibility of septic arthritis, pathologic fracture, and septicemia.

12. Katz, S., *et al.* The index of ADL: A standardized measure of biological and psychosocial function. *Journal of the American Medical Association*, 185:914-919, 1963.

A PB number at the end of a citation is an order number assigned by the National Technical Information Service, Springfield, VA 22161; 703/487-4650. Payment must accompany orders. Prices, subject to change, include mailing costs and should be checked at the time of ordering. Reports are available in paper as well as in microfiche form, which is lower in cost.

Acknowledgments

The study was designed by William G. Weissert, formerly with the National Center for Health Services Research, who together with Douglas E. Skinner, formerly with Applied Management Sciences, Inc. (AMS), directed it through the planning and early implementation stages. AMS project staff on this study included James Bremer, Margot Cella, Daniel Cohn, Robert Deane, Carolyn Goodman, Billie Hulse, and Alfred Meltzer. The AMS field team in San Diego was Donna Inversin, senior nurse assessor; Elizabeth Brandon, Lois Beagin and Gloria Rodriguez, nurse assessors; and Linda Graham, research assistant.

The California Department of Health Services continues to follow the study and formally requested waivers of several Federal regulations in order that the demonstration could be implemented. Elisabeth Lyman and Lynda Martland assisted the project.

The California Association of Health Facilities, Inc., was involved in the demonstration through its local affiliate in San Diego. Richard Hebbel and Kennon Shea participated in the effort.

NCHSR is conducting this study in cooperation with the Health Care Financing Administration (HCFA), which granted the necessary waivers of Federal regulation. The HCFA project officers on the study are Don Sherwood and Teresa Schoen.

Consultant panel members Sidney Katz, Judy Williams Powell, William Scanlon, Thomas T.H. Wan, and T. Franklin Williams contributed to the design of the demonstration.